

**ABSTRACT OF THE DISCLOSURE**

A system, device, and method for producing optical data streams in an optical communication network uses M fixed wavelength lasers and N external modulators ( $N < M$ ). The M fixed wavelength lasers are coupled to the N external modulators through a photonic cross-connect switch that is capable of routing the outputs of any N of the M fixed wavelength lasers to the N external modulators. The photonic cross-connect switch is configured to route N optical carriers at N specific wavelengths to the N external modulators. N data signals are fed to the N external modulators for producing N optical data streams at the N specific wavelengths. The photonic cross-connect switch maintains the polarity of the N optical carriers that are routed to the N external modulators.